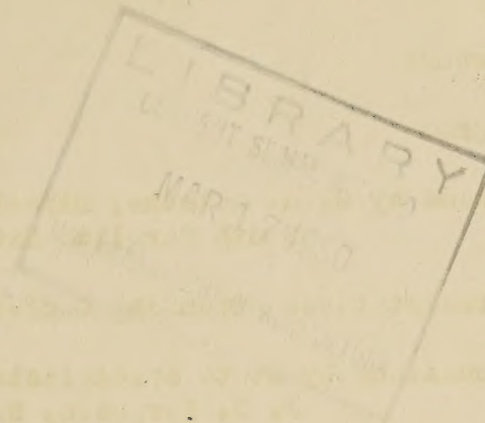


Reserve

1.913

030822



3

✓ Program Arrangement, 1949, //  
by

J. C. Oglesbee, Jr. ✓  
U. S. D. A. Extension Service

and

S. A. Williams ✓  
Clemson College Extension Service

## Table of Contents

	Page
Foreword	1
Program	2
Welcome by D. W. Watkins, Director, South Carolina Extension Service	3
Representatives Attending Conference	4
Discussions by State Specialists -	
J. C. Ferguson, North Carolina	5
S. A. Williams, South Carolina	5
J. F. Forehand, Georgia	6
H. B. Jones, Tennessee	7
H. E. Beasley, Arkansas	8
General Discussion	9
Cotton Ginning Research by C. A. Bennett, In Charge, Stoneville, Laboratory	12
Progress Report - 1949 Extension Cotton Grade Improvement Project	17
Participation by Consultants:	
S. P. Lyle	21
H. H. Williamson	21
George R. Boyd	21
Fred P. Johnson	22
Candler C. Miller	22
Claude L. Welch	23
Conclusions	24

- 1 -

FOREWORD

The grade index on American cotton has shown a gradual decline over a period of about twenty years. This condition has been brought about by earlier maturing varieties which increases weather damage, increased length of staple which makes seed cotton more difficult to clean and mechanized cotton production which increases the amount of foreign material to be removed.

Research, both public and private, has developed cotton cleaning and ginning machinery capable of preserving the potential quality of the cotton crop provided these machines are adopted throughout the industry, and provided the machinery is properly adjusted, serviced and operated.

The cotton ginning specialists' responsibility is to provide leadership in the cotton grade improvement program.

Following the theme of the 1948 conference held at Lubbock, Texas, this meeting stressed the need for close cooperation between individual specialists and between specialist and research workers in this field to improve the efficiency and the effectiveness of each individual. Time was devoted to field studies of the latest ginning machinery and to a discussion of successful Extension methods previously used in the several states.

We wish to express our appreciation to all who attended and took part in this meeting.

2  
COTTON GINNING SPECIALISTS CONFERENCE//  
(MUNNERLYN'S CLUB HOUSE)  
BENNETTSVILLE, SOUTH CAROLINA  
AUGUST 16, 1949

J. C. Oglesbee, Jr., Extension Cotton Ginning Specialist, USDA  
Presiding

A. M.

- 9:00 - 9:15 Welcome and Remarks -  
D. W. Watkins, Director  
Clemson College Extension Service
- 9:15 - 9:30 Purpose of Meeting -  
S. A. Williams, Extension Cotton Ginning Specialist  
Clemson College Extension Service
- 9:30 - 10:00 What's Going On In Cotton Ginning Research -  
C. A. Bennett, Engineer In Charge  
Stoneville Cotton Ginning Laboratory
- 10:00 - 11:45 The Cotton Ginning Program In My State -  
H. E. Beasley - Arkansas  
H. B. Jones - Tennessee  
J. F. Forehand - Georgia  
J. C. Ferguson - North Carolina  
S. A. Williams - South Carolina  
F. P. Johnson - North Carolina
- 11:45 - 12:45 General Discussion
- 12:45 - 1:00 Summary and Outlook -  
S. P. Lyle, In Charge, Agricultural Section  
Extension Service, USDA

P. M.

- 1:00 - 2:30 Lunch
- 2:30 - 6:00 Gin Tour

The Southern Cotton Oil Co. (Murray)  
L. C. Breeden, Mgr., Bennettsville, S. C.

Breeden's Ginnery (Continental)  
J. L. Breeden, Mgr., Lester, S. C.

Cen-Tennial Ginnery, Inc., (Cen-Tennial)  
J. F. McLaurin, Mgr., Bennettsville, S. C.

Seaboard Gin (Lummas)  
E. C. McInnis, Mgr., Clio, S. C.

D. W. Watkins, Director  
Clemson College Extension Service

It is my privilege to welcome the cotton ginning specialists and those interested in this phase of cotton production to South Carolina and especially to Marlboro County, which is one of the best cotton producing counties in South Carolina and the Southeast.

Cotton ginning is an important part of the total cotton program. It is an important part of the program since it is the connecting link between the producer and the consumer. The work of the cotton ginning specialists in helping the ginner do a better job of preparing the cotton for the consumer is one of the main factors in helping cotton meet the competition of synthetics and competing fibers. The cotton ginning laboratory and the cotton ginning specialists are to be congratulated on the fine piece of work they have done during the past few years. The National Cotton Council too, is to be commended for their interest in ginning work. This organization has supplied ginners and others interested with worthwhile posters on cotton fires, packaging and handling.

I hope the work of the Cotton Ginning Laboratory and of you gentlemen will be continued in such a manner as to give the cotton producer the highest possible returns for his crop.

### Representatives Attending Conference

D. W. Watkins	Director of Extension Service, South Carolina
Harry E. Beasley	Extension Cotton Ginning Specialist, Arkansas
Harrold B. Jones	Extension Cotton Ginning Specialist, Tennessee
James F. Forehand	Extension Cotton Ginning Specialist, Georgia
Sam A. Williams	Extension Cotton Ginning Specialist, South Carolina
J. C. Ferguson	Extension Agricultural Engineer, North Carolina
G. I. Johnson	Extension Agricultural Engineer, Georgia
Fred P. Johnson	N. C. Department of Agriculture, North Carolina
Vernon Hill	N. C. Department of Agriculture, North Carolina
Candler Miller	N. C. Department of Agriculture, North Carolina
J. L. Anderson	Assistant to the President, University of Tennessee, Tennessee
H. H. Williamson	Assistant Director, USDA Extension Service, Washington, D. C.
S. P. Lyle	In Charge Agricultural Section, USDA Extension Service, Washington, D. C.
J. M. Saunders	Cotton Agronomist, USDA, Extension Service, Washington, D. C.
A. T. Holmon	Extension Agricultural Engineer, USDA, Extension Service, Washington, D. C.
George R. Boyd	Agricultural Engineer, USDA, Beltsville, Maryland
C. A. Bennett	Engineer in Charge, Cotton Ginning Investigations, Stoneville, Mississippi
J. M. Cook	Cotton Branch P & MA, Clemson, South Carolina
A. M. Pendleton	Extension Cotton Ginning Specialist, USDA, Dallas, Texas
J. C. Oglesbee, Jr.	Extension Cotton Ginning Specialist, USDA, Atlanta, Georgia
Claude L. Welch	Director P & M Division, National Cotton Council of America, Memphis, Tennessee
W. T. Jacobs	P & M Division, National Cotton Council of America, Memphis, Tennessee

## DISCUSSIONS BY STATE SPECIALISTS

### North Carolina - J. C. Ferguson

Extension cotton gin improvement work in North Carolina has been in progress since 1937. During the past year most of this work has been done by Fred Johnson of the State Department of Agriculture and his two assistants - namely Candler Miller and Vernon Hill.

While I was initially employed by the Extension Service as Extension Cotton Ginning Specialist and devoted practically full time to this work for several years. More recently, my duties have changed to include farm machinery which with the stimulated interest in mechanization, has taken a major portion of my time.

However, with very close cooperation between Fred Johnson, his assistants and the Extension Service, cotton ginning inspection and improvement work has gone ahead in a most effective manner.

Cotton gin operator schools have been held for several years. These schools have been arranged and conducted by the Extension Service with the State Department of Agriculture cooperating. This year a portion of the program for each of these district ginning meetings was devoted to a technical discussion of gin machinery and related problems. In addition to these meetings, four meetings were held recently at the Raleigh Classing office at which cotton gin cleaning machinery was discussed with the ginners in attendance. Subject matter presented by personnel of the Classing office dealing with the cleaning of cotton under the Smith-Doxey service emphasized the necessity of more adequate cleaning facilities, proper drying and normal gin preparation.

Active gins are steadily declining in number but an active trend in cotton gin improvement by the more progressive ginners is very much in evidence. While my activities in Extension work has been curtailed because of other work, I still keep close contact with the work and have enjoyed the finest of cooperation from the personnel of the State Department in a joint effort toward better processing of the North Carolina cotton crop.

As a future project to be undertaken by this group the further expansion of educational work with cotton ginners in the form of more intensive training in operating techniques and maintenance should be considered. Consideration should also be given to ways and means of further impressing the farmer as to the importance of the care of his cotton in storage before ginning.

### South Carolina - S. A. Williams

The number of operating gins in South Carolina has reduced from about 1200 in 1938 to 554 in 1948. This reduction in number of gins is not due to a reduction in cotton production, but rather to an effort on the part of the ginning industry to improve the quality of the services

rendered to the farmer. The staple length of our cotton has steadily increased over this ten year period and gins set up to process 15/16 inch and shorter cotton are inadequate to process the one inch and longer cotton grown today. Where a new modern gin has been established in an area usually from two to four antiquated outfits have retired from service.

Rough preparation was up about two percent in South Carolina in 1948. This was due to conditions beyond our control - two tropical storms struck the state early in September when a large amount of cotton was open in the field. From that time throughout the harvest season humidity was extremely high and rain excessive.

Rough preparation has been reduced moderately over the past five years due to new and improved ginning equipment. The ginner cannot do all in the elimination of fough preparation. The farmer must contribute to final reduction in rough preparation by harvesting and handling his cotton so that it is not damaged before reaching the gin.

Twenty-five ginners were assisted in selecting and installing new equipment in 1948. To date in 1949 twenty absolutely new outfits have been installed. Three gins have been equipped with lint cleaners.

All of the gins in South Carolina are in the best condition to begin the season that they have been in years.

Four schools for ginners were held during the summer with an attendance of about 300 ginners.

Georgia - J. F. Forehand

The Georgia Agricultural Extension Service's Project No. 9 on cotton and tobacco is a joint project in which I work with Mr. E. C. Westbrook, Cotton and Tobacco Specialist, and Mr. J. R. Pressley, Cotton Improvement Specialist. My work is on cotton ginning and the mechanization of cotton production.

After the annual report was completed the first two weeks in January, I was assigned as Assistant County Agent in Clarke County until April 1. From April 1 until May 1 I worked in Walton County, the best cotton producing county in the northern part of the state. Director Brown wanted me to get experience as a county agent so I would have a better understanding of their problems and I would be better qualified to do my work.

On June 8 I spent a week at the USDA Cotton Ginning Laboratory, Stoneville, Mississippi, with Mr. J. C. Oglesbee, Jr., studying the latest developments at the Laboratory.

From June 13 until July 2 I attended a three-weeks cotton classing course held at the University. This course was taught by Mr. Harold Loden, Professor of Agronomy, who is doing work on cotton breeding at Texas A&M for his PhD degree.

The week of July 18 I was judging 4-H Achievement Day projects on cotton at the district meetings.

The rest of the time I have spent in visiting ginneries and working with ginneries. A new list of the active gins in Georgia has been completed by the help of the district agents and county agents. There are 683 gins listed. The ginning process bulletin, and other posters have been mailed to the new list of ginneries. This material was also mailed to the county agents.

Files at this time are being set up on Smith-Doxy Classification reports and they will be used this fall in visits to the ginneries who have a high percentage of rough preparation.

I have made four radio talks on the phases of cotton production, harvesting and results of rough preparation.

I prepared a paper on the importance of proper harvesting and ginning, which was presented before a group of farmers at a cotton short course held at Abraham Baldwin Agricultural College, Tifton, Georgia, June 24, and at this time a four-page circular is being printed that appeals to the cotton producer. It suggests tips on proper harvesting, ginning and marketing. Mr. Charles J. Bryant, Marketing Specialist, and I prepared the circular.

#### Tennessee - H. B. Jones

The position of Cotton Ginning Specialist was created to assist cotton gin owners to process quality cotton so that their farmer customers might realize the full value from their crop. The Specialist, in performing his duties, must assist gin owners in making decisions as to the kind and type of machinery to install, he must also be able to give engineering assistance and be able to demonstrate how to make adjustments and minor repairs on the machinery in the gin. Until our gins became equipped with so many complicated machines, the Specialist could give individual services to the ginneries, but in view of the rapid change being made in so many of the gins it is hardly possible for him to contact every gin in his state during one season.

In our opinion, a school should be established for instructing the gin operators in the operation, adjustment, and maintenance of their particular make of machinery. We feel that this is the responsibility of the Gin Machinery Manufacturers but if they are not willing to assume their responsibility then the various State Extension Services in cooperation with the Bureau of Plant Industry, Soils and Agricultural Engineering should proceed to establish such a school of instruction. Certainly there is need for research in determining the type of machines that are needed to give the best results in the ginning of cotton but we feel that this research will not be effective if the machines are not operated in such a way that the maximum results will be obtained.

Such a school as discussed above would not be for the purpose of teaching how to make major repairs or to completely overhaul an entire

cotton gin but simply for instruction in the basic principles of gin operation (on the type of machinery that the operator will be using) and also how to make adjustments and minor repairs.

We feel that the operators school would be of tremendous assistance to the Cotton Ginning Specialist but we also feel that the Specialist can assist himself if he would use one week out of every month during the cotton ginning season to actually work in a gin and brush up on the various changes being made in machinery.

Arkansas - H. E. Beasley

Prior to my appointment as Cotton Ginnings Specialist, the Extension Service in Arkansas had not engaged very actively in that field. The Cotton Specialists had, from time to time, held ginner's tours and ginner's meetings with the assistance of the USDA Specialist and the Laboratory staff at Stoneville.

Most of my work has, thus far, been directed toward training myself. In this, I have been assisted by Mr. Pendleton and the Laboratory staff. We worked out a training schedule which has been very helpful.

The second problem which has confronted me is that of familiarizing myself with the differences in ginning conditions and equipment in the various sections of the state.

The Arkansas Extension Service held a Cotton Classing School in cooperation with the Mid-south Cotton Growers Association. Thirty framers and ginner's attended.

I have spent most of my time visiting gins with the county agents. Usually these visits have been of the "get-acquainted" type, but sometimes ginner's ask for assistance on the first visit.

We have held one county-wide ginner's meeting this year and there are others scheduled.

The following is an outline of a training period worked out by the Arkansas Extension Service in cooperation with A. M. Pendleton:

April 4,5,6 - Texas Ginner's Association--Dallas--Visit demonstration plants while running, interview manufacturers of all small gin equipment which could not be otherwise arranged without much time and travel, meet all major people in the gin business and discuss any desired topic with authorities in one place.

April 11-14 - Little Rock Area--Study information gained at Texas ginner's convention, visit a few gins near Little Rock for information purposes and particularly to identify certain commercial gin machines and better understand their adaptation in Arkansas.

April 18-21 - Dallas--Four days of basis study designed to enable the specialist to understand the design, operation and construction of

basic gin equipment. Particular emphasis will be placed on learning the commercial brands and models of gin machinery most often found in Arkansas. This period will include visits to various gins, study of production methods in plants of manufacturers and a thorough coverage of basic principles of ginning at the office of the USDA Ginning Specialist, who will devote the entire period to Mr. Beasley for this purpose.

April 25-29 - Little Rock and Arkansas--Two days study on information received the previous week. Three or four days visiting gins for information and experience of specialist. During visits--practice taking inventory of all equipment, study flow of raw material and products through the gin, give attention to by-passes in the plants, power set-ups, fan arrangements, trash and seed disposal equipment, and particularly to drying, cleaning and extracting equipment. Prepare suggestions for his own use toward improving the plant for handling rough harvested and machine picked cotton.

May 2-6 - Staff Conference -- Office.

May 9-14 - United States Cotton Ginning Laboratory--Federal Specialist to meet Mr. Beasley and suggest plans of study and activity during the week.

September 17,18,19 - Federal Specialist will make trips to Arkansas gins with Mr. Beasley.

August - Attend Ginning Specialists' Conference, plans for which are incomplete.

During unscheduled periods to:

1. Visit a large number of cotton gins.
2. Prepare technical information for future ready reference.
3. Prepare timely releases and news letters for distribution to ginners and farmers.
4. Prepare a plan of work.
5. Visit cotton classing offices in Arkansas--Cotton Branch PMA.

Suggestions:

1. During trip to Dallas a list of necessary testing instruments and tools will be drawn up.
2. It is especially recommended by the Federal Ginning Specialist that Mr. Beasley be furnished with the bi-weekly cotton gin trade magazine, "The Cotton Gin and Oil Mill Press," Commerce Street, Dallas, Texas. This is the official state and national ginners magazine (including Arkansas) and all Arkansas ginners take it.

#### GENERAL DISCUSSION

Near the end of the morning session one hour was devoted to a discussion period. At this time outstanding problems mentioned by the State Specialists during their formal remarks were given consideration

through an exchange of ideas among those present. Most attention was given to discussions dealing with ways for effectively reaching producers with information on harvesting and handling seed cotton prior to ginning and on methods for teaching operation techniques to the operating personnel of the ginning plant.

### Teaching Ginning Plant Personnel

It is recognized that the proper operation of the ginning plant facilities is of prime importance in a program of cotton grade improvement. Since ginning is a seasonal operation many of the workers in the cotton gin are employed on a part-time basis and may change from season to season or even during the same season. Consequently, it has been very difficult to maintain a corp of trained workers large enough to man all of the cotton gins throughout the belt. This situation is being somewhat alleviated by more gins employing one or more gin employees on a full year basis. This full year employment is made possible by many gin owners having other enterprises whereby the employees can be used throughout the year.

To help solve this problem, Extension workers have held one and two-day gin operator schools throughout the cotton belt. These have been very helpful but it is now realized that they are not completely adequate and that longer, more complete and detailed courses of study are needed to fully acquaint gin employees with the complicated and delicate machinery that they operate for handling, drying, cleaning, ginning, lint cleaning, seed and trash disposal, packaging and pressing.

In view of this, everyone agreed that additional training is desirable for all gin employees and is almost a must for that person who has the general supervision of the gin workers. Careful study will be required to answer the questions that are involved in a training program of this type. Some of the questions are as follows:

1. Is this a responsibility of the cotton gin manufacturers and if so will they act favorably to inaugurate such a program?
2. If the manufacturers do not act favorably, can the USDA Cotton Ginning Laboratories undertake such a program or is this program of training a direct responsibility of the Extension Services with its present facilities or with facilities that may be provided?
3. What should be the length of such a short course? Suggestions ranged from one or two weeks up to three months.
4. Who would provide the teaching-staff and leadership for such a short course?
5. Would the State and National Ginners' associations lend their support?
6. Since out of season gin operation is often not comparable to ginning cotton directly from the field during the harvesting season, at what time of year could such a short course be scheduled to give ginner experiences in conditions comparable to regular season ginning.

## Reaching Producers More Effectively

Harvesting and handling seed cotton before it reaches the gin often determines to a large extent the ultimate quality of the lint and seed. Many of those present felt that the cotton grade improvement program would give better results if the producers were urged to use more care in harvesting seed cotton.

Some problems discussed in connection with this were:

1. How successful has our method of reaching the producer proven?
2. Does Extension workers generally (particularly County Agents) realize the importance to the producer of careful and proven practices in harvesting, handling and ginning cotton?
3. Is there any information now available from research that would aid in carrying a more effective program to the producer?
4. Can producer interest be stimulated where the lint cotton and seed are sold to the ginner or point buyer on a "hog-round" basis?
5. Would not this work with the producers be strengthened by more effective cotton marketing programs?

Several states are planning such a program designed to reach more producers in 1950 but answers to the above questions will enable these states to plan a better program.

Cooperative publications were discussed briefly but sufficient time was not available to determine whether or not the specialists wished to develop, during the coming year, other leaflet similar to the one issued in June 1949 on "The Ginning Process". It is expected that the matter will be given close study and all Specialists given an opportunity for expression before proceeding with other publications of this nature.

Each State Specialist expressed much benefit from the meeting and association with other workers in their field. The desire of everyone is to make the get-together an annual affair.

We are greatly indebted to Messrs. H. J. Munnerlyn and C. L. McCormac, businessmen of Bennettsville, South Carolina, for making their private clubhouse available for this meeting.

C. A. Bennett - Engineer in Charge,  
Cotton Ginning Investigations

Basic research at the USDA Cotton Ginning Laboratory is concerned with the discovery of principles and methods for improving the values of the American cotton crop through better ginning. From this basic research, applications in practical demonstration and use are evolved. Today's review of the current situation is divided into two sections; first, some of the more recent examples of applied research; and second, basic research at the USDA Cotton Ginning Laboratory.

Since the Ginning Laboratory is a joint partnership of the Agricultural Research Administration and the Production & Marketing Administration, we wish to give the regards and best wishes to the conference from our P.M.A. colleagues who are unable to be present. Mr. Gerdes has sent an exhibit of cloth samples that will be discussed and be of interest to all of you.

APPLIED RESEARCH - From the work that was done at Wadesboro, North Carolina, in the development of a small drier-cleaner-extractor unit for little gins, known in our projects as a "Drystractor", a company has now brought out a "package proposition" to fill the need in a trade installation. This manufacturer has developed a combination cleaner and master extractor. To this they have added a 24-shelf, Government design tower drier, and have assembled the outfit in a complete package with heater, fans, separator and piping. Attached to the drier tower is an elevated frame with upper and lower platforms. On the lower platform space are three fans, one suspended from the underside of the upper platform. These fans serve for cotton supply to the tower, and for a push-pull drying and trash disposal system. One short lineshaft handles the drives for the fans, separator and Jembo.

The elevation drawing, from which the company developed this package, is available from the Laboratory. A number of these have been installed in the Delta, at an approximate cost (including 75 HP motor) of \$9,000. They occupy a floor space of 18 ft. x 24 ft., and can be placed at the end or side of existing gin structures. They may be operated independently for service to cotton house storage when the gin is idle; or they may be keyed into the line operation of the gin whenever rough cotton comes in.

A second example of applied research, that has arisen from the Ginning Laboratory work, is the growing use of small pipe seed systems. Our Mr. Franks has recently constructed a portable seed handling unit that has a turbo-blower, 6-inch flexible seed suction trunk, cyclone separator and rotary vacuum wheel, all on a small dolly and powered with two motors. The turbo-blower motor (5 HP) is directly connected to the blower, while a 1-1/2 HP small motor drives the vacuum wheel dropper. This unit, after its test and satisfactory performance, should prove to be very handy for loading trucks from seed houses, or unloading trucks into storage.

A third example of applied research is the application of new boll-catchers and trash traps that have been designed on a careful change of

velocities so that heavy material is readily separated from the cotton stream. Last year we had a boll-catcher at the Maury Knowlton Gin where the John Deer stripper tests are being conducted. This unit was placed in the push-pull set-up at the zero point between the tower discharge (push) and the cotton suction (pull) or the cleaner-extractor-cleaner battery that followed the tower. It gave most gratifying results.

A fourth example of applied research is the growth of the use of various misting systems for restoring moisture to extra dry fiber when it enters the cotton press. Most of these utilize the misting nozzles and wetting agent solutions. A radical departure from the misting solution may be seen at Mr. McLaurin's cotton gin here in Bennettsville where steam jets, placed below the lint slide, are employed to accomplish the same result. The use of steam is more expensive, generally, than the use of wetting agents whose cost is 1/3 cents per bale. A Memphis concern has recently brought out an anti-drip cylinder with misting ports, so that the nozzles are masked off when there is no cotton on the lint slide. The cylinder drains back to the reservoir, but does not let the nozzle drip on the lint slide.

A fifth example of applied research is the recent mixing of drier types by Continental Gin Company in the Mississippi River valley. Where heavy, rough cotton is encountered at the larger gins, this company is using a trough drier to receive the lumpy seed cotton from the first separator. After the cotton has passed through the cleaner-extractor-cleaner combination, it is drawn through a Government design tower to the separator above the ginning battery. This saves an extra fan, and gives a chain drying and smoother seed cotton that effectively supplies the feeders.

A sixth example of applied research is the adoption of the tunnel and lateral system of bulk seed drying that the Laboratory has been promoting. In this connection, one of our co-operators has placed a corn conveyor at the end of his seed house tunnel so that he may unload from a tunnel belt to wagons on the one hand or to a freight car on the other.

A seventh example, of applied research is the expanding growth of the use of air suction as a result of the many possibilities that we have demonstrated at Stoneville. This has enabled machinery to be placed at ground level; drier towers to be placed in chains of processing without adding extra fans; push-pull layouts for various set-ups of machinery; and elimination of much dusty air, fly and filth from the gin building.

Since fans are the great profit thieves of the power, we urge all of the ginning specialists to help the ginners to throttle by dampers and to redesign piping systems so that power may be conserved.

In regard to Basic Research at Stoneville and Mesilla Park, Capt. Boyd has already outlined to you the scope of our activities and fiber processing in his Division of Mechanical Processing of Farm Products. Our brief resume here will deal only with the cotton ginning work at Stoneville.

COTTON STORAGE RESEARCH - The equipment, storage bins, and some instruments are now at hand for this year's crop studies. With the equipment, our engineers can selectively put seed cotton raw into the bins, or process it in various ways as it goes in, or treat the bulk storage with air or hot air as required. Among the instruments now being purchased are groups of thermo-couples for each bin (4 thermo-couples per bin) and potentiometers for stationary and portable use, so that the observer can quickly record the bulk pile temperatures from one central station or panel.

PACKAGING RESEARCH - Our PMA colleagues are getting set to install a full automatic sampling device for the Stoneville mechanized production gin. No estimate is available as to the cost of the device, but one of the "High Command" thinks it may approximate \$2500. Some of the larger planters are interested in getting a sampler, and the complete automatic device that Mr. Gerdes' staff is now developing may be the answer. Our own engineers are making an interesting study in the feasibility of converting a triple-ram, down-packing, standard-density press to the form of piping advocated for up-packing units. In this conversion, the central ram will expedite travel up to about 1000 lbs. psi, and the two trailing side rams will then be cut in for high pressure service.

CLEANING SEED COTTON RESEARCH - Capt. Boyd has briefed the RMA contract work in this field. Stoneville is trying out some rebuilt cylinder cleaners.

MOISTURE RESTORATION & CONDITIONING RESEARCH - A complete review of present methods of single versus chain drying is laid out for tests. Attempts will be made to accomplish the major portion of drying in the first link of the chain. Thereafter, conditioning and restoration efforts will be tried out. Steam for humidification is being provided for the early tests. Last years tests gave excellent indications to the effect that moisture restoration prior to ginning produced better and results in yarns, than adding moisture on the lint slide.

LINT CLEANING & AIR JET CLEANING - The Government design lint cleaners are now on the market and have been giving good results, with now and then a kick-back. Departure from our grid design, plus faulty by-pass valve construction seems to have caused some damage when tags of lint built up in the gin flues and then cut loose in a choking wad. Mr. John Mitchell phoned me that these troubles were now well cleaned up. The Lummus Company have sold a number of very fine gins with their air-jet nozzle cleaning, and reports have been good. Since the ginning Laboratory has not received its unit back from the factory, we are unable to give Extension any first hand impressions of the best methods of operation of the device.

In this connection, a very important element has been called to our attention by the Entomologist, and we request the assistance of each Cotton Ginning Specialist in the observations. The Laboratory has never had any seed escape through its lint cleaners as the fiber goes to the bale. If your observations confirm this in the field, bale fumigation will be eliminated.

DISPOSAL OF COTTON GIN TRASH - Research in this important field, from both the viewpoints of health and public nuisance, are being conducted. Several designs of incinerators are available, but these have objections from the expense, smoke and fire spreading features. The Laboratory is working on this important subject.

SEED DRYING, STORING & PRESERVATION - Stoneville seed handling projects under RMA funds are getting underway to the full extent of the available money. The reel drier has been re-vamped to handle damp seed by direct hot air, recirculated hot air, and by prewarming; all followed by provisions for storage and bulk cooling. The preservation of planting seed has been the main objective, but the successful removal of 4% or more of moisture from 18% seed is also our aim. Pilot plant studies can be handled in small units that Mr. Franks is building, and we hope that we can determine the very elusive facts as to rates of moisture release from differing dampness conditions of the seed. Upon these facts, the successful design of a cheaply constructed and economically operated seed drier may then be made.

GIN STAND IMPROVEMENTS - Concurrent with our efforts toward improved cleaning and seed cotton, many of you know that we have worked inside the gin stand with devices for better moting and cleaning.

MILL COMPLAINTS FROM DEFECTIVE GINNING PROCESSES - Mr. Gerdes and his staff have handed me the attached letter (here quoted only in the pertinent parts) from the Pacific Mills at Lyman, South Carolina, together with samples of fabrics for your inspection. This letter of July 1, 1949, addressed to Mr. Gerdes by Mr. B. P. Whitney, (in part) says:

"The particular fabric defects stem from three causes; first, neps with which you are fully familiar; second, immature fibres which do not take dye properly, and which are usually associated with neps; and, third, what appear to be seed coat fragments with very short fibre attached which form small tufts or bunches on the surface of the yarn and cloth. These fabric defects have caused us serious difficulties ever since competitive conditions returned to the goods market some months ago. They appear to be more prevalent than they were in the pre-war years.

"In an envelope are a couple of samples carrying bits of leaf . . . The bits of leaf are not so objectionable. They do not create a thick spot in the yarn and the leaf dissolves out in the finishing.

"A sample of 80 square print cloth . . . marked with red circles . . . are examples of the bunches on the surface of the cloth, caused, we believe, by seed coat fragments. The red arrows show spun-in leaf particles. The quadrilateral figures show area where neps are prominent.

" . . . finished cloth labeled "4" are printed fabrics. The circles surround typical types of defects caused by seed coat fragments. You will note that the bunches lying on the surface of the fabric prevented the color from being transmitted from the printing roll to the fabric.

"A sample of blue dyed fabric marked "5" . . . shows another defect arising from the seed coat fragments. The point at which the bunch is on the surface of the fabric gives the effect of a small spot where the fabric is thicker than normal. This point absorbs an excess of certain dyes and therefore shows up in the finished cloth as a darker spot than the rest of the fabric.

"A sample . . . marked . . . "6" . . . provides another example of the failure of immature fibres to take the dye properly . . .

"One point with respect to the seed coat fragments that is worth mentioning has to do with the harmful effects in our finishing process. As you will see in the yarn and grey cloth, you can always see a bit of seed fragment together with the tuft of short fibre. During the finishing, the seed coat fragment is dissolved by the chemicals used and all that is left is the tuft of short fibre."

In further connection with Mr. Whitney's letter to Mr. Gerdes, Dr. Roaland Lee of PMA thought that much of the trouble arose from particles of aborted seed which have been crushed in ginning and processing and scattered throughout the cotton fibres. These particles create brown stains on the filling yarns. Where free fatty acids have developed in the aborted seeds, the pigmentation develops into dye-like compounds that produce a purplish or reddish dye. Dr. Lee thinks that this situation has caused much of Mr. Whitney's troubles.

In conclusion, our Division wants to thank the assembled leaders in the Extension work on cotton ginning for the fine cooperation with the Laboratory. The numerous visits of ginners and Extension Cotton Ginning Specialists to Stoneville and other points of demonstration have produced some very gratifying effects among the ginners and machinery manufacturers.

PROGRESS REPORT  
EXTENSION COTTON GRADE IMPROVEMENT  
Cotton Ginning

The Extension Cotton Grade Improvement work is being conducted on a beltwide basis to increase the farmers' income through the adoption of better harvesting, handling and ginning practices. The objectives of the project are (1) to furnish better quality cotton for the industry and higher incomes for the farmer; (2) to obtain better equipped and operated cotton gins as an aid in preserving cotton quality (and farmers' income) as roughly harvested cotton increases; (3) a better understanding by every branch of the cotton industry of the ways and means to higher incomes through the use of improved methods; (4) savings to the industry through a reduction in the loss from fires, accidents and poorly packaged products.

Better Qualities: With the exception of 1947, the quality of the current crop is the highest since 1943. The Grade Index of the 1948 crop is estimated to be 95.7 (middling white equals 100). This compares with 91.8 for 1945. The 1948 crop contained a higher percentage of cotton graded as "extra white" than previous crops. Cotton reduced in grade because of rough preparation constituted about 3.1 percent of the 1948 crop as compared with 7.6 percent in 1946. Based on the 1948 crop of 14,500,000 bales, this amounts to better ginning preparation on 600,000 bales with an increased value of \$4,500,000. Rough preparation in 1948 was the second lowest on record and the lowest on record for a crop of its size.

The most outstanding example of an improvement in preparation occurred in North Carolina where 16.6 percent was graded "rough" in 1947 and only 5.0 percent 1948. The State produced 697,042 bales in 1948. By improving the preparation, the value of 80,857 bales was increased more than \$600,000 or 7.50 per bale, in this state alone.

The high quality 1948 crop was produced despite the following difficulties: (1) It was the largest crop since 1937 with the fewest gins in 50 years available to process it. There were 29,000 gins in 1905 compared to 8,500 today. (2) Much greater amounts of machine harvested cottons were produced. Estimates of total crop harvested with machines last year vary from 5 to 10 percent. (3) The staple length was exceedingly long 32.4 thirty-second inches, next to the longest on record. Long staples are difficult to clean at the gin and often bring reductions in grade. (4) Labor shortages were still severe in many areas, resulting in greater amounts of foreign material in seed cotton.

This high quality cotton crop with low percentage of rough preparation indicates material improvement in ginning methods and equipment.

Better Equipped and Better Operated Cotton Gins: The Extension Service has worked with the USDA Cotton Ginning Laboratory to bring about the quickest possible adoption of new machinery and methods at commercial gins. Seed cotton driers add \$1 to \$5 per bale to the value

of ginned lint. In 1948 more than 75 percent of the total cotton crop was ginned on gins equipped with seed cotton driers which increased the value of the lint between 15 and 20 million dollars. This represents more than three times the amount in 1940. About 90 percent of the cotton gins are now equipped with extractor feeders. Lint cleaners were introduced at gins for the first time in 1948. Gins so equipped handled more than 100,000 bales with an average bale value increase of \$7.33 per bale or nearly \$1,000,000 total. Other equipment, such as improved conditioning, extracting and cleaning machinery, pure planting seed systems and improved baling devices are being installed throughout the cotton belt to meet the problems of new varieties, mechanization and rough harvesting.

New single battery gin plants equipped with devices mentioned above cost \$150,000 to \$175,000. They give \$7.00 per bale in higher grades for each dollar of operating cost when compared to a moderately equipped gin. The equipment required in gins located in various cotton growing areas will vary according to climatic conditions, varieties, and other factors. Ginning Specialists and County Agents assist ginners in selecting the proper equipment to produce highest grades in each area. County Agents in 444 cotton producing counties report assistance rendered to 5,523 ginners in 1948 by furnishing help on machinery selection and operation.

Typical of such services was the rapid dissemination of information on the lint cleaner. In early 1949 research results and field tests from the 1948 crop indicated premium returns from the lint cleaner of \$7.333 per bale. Extension immediately made this information available to all ginners. As a result 125 gins have been equipped with these machines. These gins will handle 375,000 bales during the coming season at an estimated increased value of \$2,500,000.

Better Understanding by the Cotton Industry: Nine State Specialists and two Federal Specialists held or assisted with 283 meetings involving cotton producers and ginners throughout the cotton belt and visited 3,200 gins. The meetings held were from one to three days and were on a state, area or district basis and were designed to teach the ginner how to select and operate machinery for the best results in his gin plant. Operator schools were held in North and South Carolina, Alabama, Missouri, Arkansas, Arizona, and California with a total attendance of more than 2,000. Missouri, Arkansas, Texas, Louisiana, Mississippi, Tennessee and Alabama held 2-day schools at the USDA Cotton Ginning Laboratory at Stoneville, Mississippi, with a total attendance of 460. Information on harvesting, defoliation, and ginning for higher returns was given to farmers throughout the cotton belt at hundreds of Extension meetings. 25,000 bulletins, circulars and other suitable written materials were prepared and distributed by Extension to show farmers and ginners the ways and means of securing higher incomes through higher grades.

Reduced Losses by Fires, Accidents and Poorly Packaged Products: The industry, from producer to consumer, has requested Extension leadership in this phase of the cotton improvement program. Savings to the industry from this program, which in most cases means higher prices to the producer for his produce, are already tremendous. In 1944 the industry lost 90,000 bales of cotton worth \$12,000,000 through fire.

Figures are not available for 1948 but by 1947 this loss had been reduced about 50 percent with a total saving of \$6,000,000. Hundreds of ginners have installed belt guards and other safety devices to protect employees from accidents. Steady progress has rewarded educational efforts to reduce losses from rolling, big-ended and overweight bales.

Personnel of the Project: The Extension Cotton Grade Improvement program involves harvesting, handling and ginning and assists Extension workers concerned with production and marketing. Eight State Cotton Ginning Specialists and two Federal Specialists are carrying on the work in the following locations:

Lawrence Ennis - Alabama	J. C. Ferguson - North Carolina
H. E. Beasley - Arkansas	S. A. Williams - South Carolina
J. F. Forehand - Georgia	H. B. Jones - Tennessee
M. M. Mayeux - Louisiana	F. E. Lichte - Texas

J. C. Oglesbee, Jr., Atlanta, Georgia  
Eastern half Cotton Belt

A. M. Pendleton Dallas, Texas  
Western half Cotton Belt

Mississippi has appointed T. J. Johnston to serve that state as a Cotton Ginning Specialist beginning September 1, 1949. In other states where the cotton production does not justify a full time Cotton Improvement Specialist, Agronomist or Agricultural Engineer in carrying information to cotton producers and ginners. During the coming harvesting season, State Cotton Ginning Specialists will be serving producers and ginners in states producing more than 83 percent of the nation's cotton crop.

The principal duties of the State Cotton Ginning Specialists are to (1) assist farmers and ginners (2) train and assist County Agents (3) help to plan and carry out a coordinate State Cotton Program (4) act as liaison between Extension Service and the cotton industry of that State.

The principal duties of the Federal Specialists in connection with the project are to (1) act as liaison between State Specialists and Research agencies (2) train State Ginning Specialists (3) prepare subject matter for use of State Specialists (4) assist State Specialists with local problems (5) act as State Specialist in states without such a specialist (6) be responsible for sound planning and operation of the program.

Sponsorship: The Cotton Grade Improvement Program is sponsored jointly by the Extension Service, the Cotton Branch, P.M.A. and the Bureau of Plant Industry, Soils and Agricultural Engineering. The principal source of research information is the U. S. Cotton Ginning Laboratory, Stoneville, Mississippi.

Activities: The State and Federal Ginning Specialists visited 3,200 cotton gins and participated in 283 meetings throughout the

Cotton Belt during the past year. Attendance at the 78 meetings attended by Federal Specialists was 18,950. The State Specialists in every major cotton producing state carried out an active program in 1948. Federal Specialists visited and assisted with cotton work in every cotton producing state during the past year.

Gin operators' schools were held in North Carolina, South Carolina, Alabama, Missouri, Arkansas, Arizona, and California with a total attendance of 2,000. 460 ginners traveled to Stoneville, Mississippi, to attend Extension Ginners' Schools for the states of Texas, Missouri, Arkansas, Louisiana, Mississippi, Tennessee and Alabama.

All accepted Extension methods were used as radio, newspaper articles, trade magazine articles, bulletins, personal visits, correspondence and group instruction.

State and Federal Ginning Specialists were active in practically all the important cotton projects throughout the Cotton Belt. Among committees and special assignments they worked on were committees of:

- The National Cotton Council
- U. S. Department of Agriculture
- Land Grant Colleges
- Cotton Research Congress
- National Cotton Mechanization Conference
- Spinner Breeder Conference
- Ginners' Associations
- State Cotton Committees

## PARTICIPATION BY CONSULTANTS

S. P. Lyle, In Charge Agricultural Section  
U. S. D. A. Extension Service

As a result of last year's meeting in Lubbock, Texas, we have had a more uniform cooperation between specialists of the various states and the United States Department of Agriculture. This has brought about improved efficiency and effectiveness of each individual working in the project. Examples of this are interchange of ideas between states and the cooperative publication on The Ginning Process. In summarizing the reports by state specialists four major points of emphasis seem to stand out, as follows:

1. Better qualities
2. Better equipped and operated cotton gins (practically all states indicate that the number of ginning plants is decreasing.)
3. Better understanding of the cotton industry by producers and ginners.
4. Reduction of losses to the industry from fires, accidents and poorly packaged bales.

In the coming year what phases of the work should we emphasize? What priorities should be given to these phases and what part of our time shall we devote to each? These questions must be answered by each individual based upon conditions in his area of responsibility and as they relate to the overall cotton industry. Some of you have mentioned the need for other cooperative publications. Now is the time to further explore the needs in this field and to work out a procedure that will render the best service to cotton producers and ginners.

H. H. Williamson, Assistant Director  
Extension Service, U. S. D. A.

Director Williamson stated that he appointed the first cotton ginning specialist in the United States while director of Extension in Texas. He further stated that he thinks the work of a cotton ginning specialist is an important part of any state's cotton improvement program. He expressed his keen interest in this type meeting where state specialists have an opportunity to review their mutual problems and discuss possible solution.

George R. Boyd, Prin. Agri. Engineer in Charge  
Division of Mechanical Processing of Farm Products

Capt. Boyd stated that research work in cotton ginning began in 1930 with the establishment of the Stoneville, Mississippi, Cotton Ginning Laboratory. This work has grown over the years and a branch

laboratory is now in the process of construction in New Mexico. This laboratory will supplement but will not duplicate the work now being done at the Stoneville laboratory.

The ginning research work by the USDA has been conducted through the years in collaboration with manufacturers and in cooperation with the Extension Service so as to reach the largest number of ginners and farmers. Research must look ahead to changes in varieties, changing harvesting methods, and other problems associated with a changing industry.

Fred P. Johnson  
Cotton Ginning and Marketing Specialist  
North Carolina Department of Agriculture

From our contacts with gin operators in North Carolina, we are convinced that they take a much more intelligent interest in doing a good job of ginning when they have had the benefit of attending an Extension short course on gin operating technique. Our field men find that they can detect a distinct difference in the attitude of those operators who have attended the short course and those who have not.

It is from this conviction that I am taking the liberty of suggesting that this group work out plans for expanding this phase of Extension gin work. I believe that every state should have some place, either at Extension headquarters or elsewhere, where Extension Specialists could bring in gin operators and put on a short course of from 3 to 10 days duration, depending on the facilities for teaching and demonstration. This policy, if adopted in the cotton growing states, would relieve the research personnel of the U. S. Ginning Laboratory at Stoneville of the burden of doing Extension work. I mention this merely as supporting argument.

Another suggestion, since I am taking liberties, is that the Extension Service develop and provide subject matter on ginning for the cotton producer. I believe you will all agree that one of the greatest handicaps we have in promoting better ginning is the lack of appreciation by the farmers. This suggestion springs from complaints I have heard ginners make about the small amount of work being done to educate the producer on how he can cooperate in the production of better quality cotton, particularly as it is effected by gin service.

There is no need for me to tell you that I have enjoyed this conference and I am deeply grateful to the Extension Service for the invitation to participate in your deliberations.

Candler C. Miller  
Cotton Marketing Specialist  
North Carolina Department of Agriculture

A more intensive campaign is needed to convince producers of the importance of properly conditioning cotton before bringing it to the gin.

The pre-ginning condition of seed cotton this season indicates the need for such a campaign. Of course, much of this badly conditioned cotton for ginning has been unavoidably due to lack of storage facilities. However, many could improvise storage space sufficiently to greatly improve the quality of cotton for ginning. A campaign begun sufficiently in advance of actual harvesting season and continued on through harvesting, should be of inestimable value.

Devise some convincing method to discourage cotton producers from demanding that their seed be ginned so close that it results in damage to the ginned lint. This ancient fixation among farmers, that they suffer serious loss in pounds of ginned lint when a few "tags" of cotton are left on the seed, accounts for a serious percentage of subnormal ginning. This season, I have seen as much as two grades reduction in quality of ginned lint due to farmers demanding that ginners clean their seed. Where farmers save their own seed for planting, they especially want clean seed. In this case, greater losses result in the damage to that lint as it is usually the highest quality seed cotton the farmers produce. Encouragement toward delinting and treating of seed should aid in eliminating this damage.

Intensify campaign to urge farmers to sell their cotton on grade and staple values. Not until farmers demand a price comparable to the quality of their cotton will the buyers abolish the old-established system of buying cotton on a "hog-round" basis. The average quality of cotton cannot be improved to any appreciable extent under the "hog-round" system of marketing.

The above suggestions, I feel, could materially improve the overall conditions of processing and marketing cotton.

I greatly appreciate this opportunity of tendering these suggestions and pledge my full cooperation with any program for implementing them. I believe all of us who work with cotton ginners will agree that much can be accomplished by helping the cotton producer realize his responsibilities in the production of better grades and better qualities of cotton. We have not solved all the problems of the ginner, but I'm sure we will eliminate many of them if we bring about better harvesting and conditioning on the farms.

Claude L. Welch  
Director P & M Division  
National Cotton Council of America

We appreciate the invitation from Sam Williams to attend and participate in this meeting.

It has been our pleasure to work with the cotton ginning specialists on a number of programs, such as: fire prevention, over-weight, big-ended and rolling bales, and the grade improvement of clean cotton campaigns. It is our observation that the cotton ginning specialists are doing a very good job and it is a pleasure for us to cooperate very closely and to supplement such projects as mentioned above when it is mutually agreed to be appropriate. You may count on our support in the work you are doing to improve the efficiency of cotton ginning and to improve cotton quality.

## CONCLUSIONS

1. This is a relatively new Extension project and one with no college courses available for training leaders or State Extension Specialists, therefore, careful selection and training of personnel is required if the project is to proceed on a sound basis. Most of the major cotton states now have Cotton Ginning Specialists. These men have, in most cases, received their training through the help of other Specialists and the U.S. Cotton Ginning Laboratory.
2. Cotton ginning information is highly technical, therefore, many county extension workers do not have the basic training to enable them to carry out an educational program designed to improve ginning facilities in the county. Consequently, the state specialist is called upon to handle problems of a local nature and to make specific recommendations for single installations. To do this most effectively, he must be familiar with the entire state cotton program and with the program in each of the counties.
3. The cotton grade improvement program carried on by the Ginning Specialists must be a balanced program and must be coordinated with the entire state extension cotton activities.
4. Cotton harvesting and ginning machinery practices are undergoing many revolutionary changes, some of which will have a profound and lasting effect on the entire cotton industry, as well as on the pattern of agriculture for the entire south and possibly the nation.

If the Extension Service is to provide leadership for the cotton producers, then we must be well posted on the developments in the harvesting and ginning fields. To do this will require that we work closely with experiment stations and research laboratories, as well as with the manufacturers of harvesting and ginning machinery. We must keep abreast of research and development work on machines for the production, harvesting and ginning of cotton and from time to time suggest additional research that may be needed.

5. As a means of furthering this program the extension cotton ginning specialists should develop a program that would reach cotton producers so that better harvesting and handling methods would be adopted.
6. The need for more intensive training of employees at cotton gins was pointed out by several State Specialists. (See the section dealing with the discussion of this subject.)
7. Other Extension publications dealing with ginning problems similar to the leaflet published in 1949 should be developed by the Specialists for use of operators of cotton ginning machinery.